AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1 1. (Currently amended) A method for detecting a thermal anomaly in a
2 computer system, comprising:
3 determining correlations between instrumentation signals in the computer
4 system;
5 deriving an estimated signal for a thermal sensor in the computer system
6 from the correlations, ~~wherein the estimated signal is derived from correlations~~
7 ~~with other instrumentation signals in the computer system~~;
8 comparing an actual signal from the thermal sensor with the estimated
9 signal to determine whether a thermal anomaly exists in the computer system; and
10 if a thermal anomaly exists, generating an alarm.

1 2. (Original) The method of claim 1, wherein generating the alarm
2 involves communicating the alarm to a system administrator so that the system
3 administrator can take remedial action.

1 3. (Original) The method of claim 2, wherein communicating the alarm to
2 the system administrator involves communicating information specifying the
3 nature of the thermal anomaly to the system administrator.

1   4. (Original) The method of claim 1, wherein comparing the actual signal

2   with the estimated signal involves using sequential detection methods to detect

3   changes in the relationship between the actual signal and the estimated signal.

1   5. (Original) The method of claim 4, wherein the sequential detection

2   methods include the Sequential Probability Ratio Test (SPRT).

1   6 (Canceled).

1   7. (Currently amended) The method of ~~claim 6~~claim 1, wherein

2   determining the correlations involves using a non-linear, non-parametric

3   regression technique to determine the correlations.

1   8. (Original) The method of claim 7, wherein the non-linear, non-

2   parametric regression technique can include a multivariate state estimation

3   technique.

1   9. (Original) The method of claim 1, wherein the instrumentation signals

2   can include:

3   signals associated with internal performance parameters maintained by

4   software within the computer system;

5   signals associated with physical performance parameters measured

6   through sensors within the computer system; and

7   signals associated with canary performance parameters for synthetic user

8   transactions, which are periodically generated for the purpose of measuring

9   quality of service from and end user's perspective.

1   10. (Original) The method of claim 1,

2   wherein deriving the estimated signal for the thermal sensor involves

3   deriving multiple estimated signals for multiple thermal sensors in the computer

4   system; and

5   wherein comparing the actual signal with the estimated signal involves

6   comparing multiple actual signals with the multiple estimated signals to determine

7   whether a thermal anomaly exists in the computer system.

1   11. (Currently amended) A computer-readable storage medium storing

2   instructions that when executed by a computer cause the computer to perform a

3   method for detecting a thermal anomaly in a computer system, the method

4   comprising:

5   <u>determining correlations between instrumentation signals in the computer</u>

6   <u>system;</u>

7   deriving an estimated signal for a thermal sensor in the computer system

8   <u>from the correlations</u>, ~~wherein the estimated signal is derived from correlations~~

9   ~~with other instrumentation signals in the computer system~~;

10   comparing an actual signal from the thermal sensor with the estimated

11   signal to determine whether a thermal anomaly exists in the computer system; and

12   if a thermal anomaly exists, generating an alarm.

1   12. (Original) The computer-readable storage medium of claim 11,

2   wherein generating the alarm involves communicating the alarm to a system

3   administrator so that the system administrator can take remedial action.

1   13. (Original) The computer-readable storage medium of claim 12,

2   wherein communicating the alarm to the system administrator involves

3   communicating information specifying the nature of the thermal anomaly to the

4   system administrator.

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1 14. (Original) The computer-readable storage medium of claim 11,
2 wherein comparing the actual signal with the estimated signal involves using
3 sequential detection methods to detect changes in the relationship between the
4 actual signal and the estimated signal.

1 15. (Original) The computer-readable storage medium of claim 14,
2 wherein the sequential detection methods include the Sequential Probability Ratio
3 Test (SPRT).

1 16 (Canceled).

1 17. (Currently amended) The computer-readable storage medium of ~~claim~~
2 ~~16~~claim 11, wherein determining the correlations involves using a non-linear,
3 non-parametric regression technique to determine the correlations.

1 18. (Original) The computer-readable storage medium of claim 17,
2 wherein the non-linear, non-parametric regression technique can include a
3 multivariate state estimation technique.

1 19. (Original) The computer-readable storage medium of claim 11,
2 wherein the instrumentation signals can include:
3   signals associated with internal performance parameters maintained by
4 software within the computer system;
5   signals associated with physical performance parameters measured
6 through sensors within the computer system; and
7   signals associated with canary performance parameters for synthetic user
8 transactions, which are periodically generated for the purpose of measuring
9 quality of service from and end user's perspective.

1   20. (Original) The computer-readable storage medium of claim 11,

2   wherein deriving the estimated signal for the thermal sensor involves

3   deriving multiple estimated signals for multiple thermal sensors in the computer

4   system; and

5   wherein comparing the actual signal with the estimated signal involves

6   comparing multiple actual signals with the multiple estimated signals to determine

7   whether a thermal anomaly exists in the computer system.

1   21. (Currently amended) An apparatus that detects a thermal anomaly in a

2   computer system, comprising:

3   <u>a correlation determination mechanism configured to determine</u>

4   <u>correlations between instrumentation signals in the computer system;</u>

5   an estimation mechanism configured to derive an estimated signal for a

6   thermal sensor in the computer system <u>from the correlations</u>~~, wherein the~~

7   ~~estimated signal is derived from correlations with other instrumentation signals in~~

8   ~~the computer system~~;

9   a comparison mechanism configured to compare an actual signal from the

10   thermal sensor with the estimated signal to determine whether a thermal anomaly

11   exists in the computer system; and

12   an alarm generation mechanism, wherein if a thermal anomaly exists, the

13   alarm generation mechanism is configured to generate an alarm.

1   22. (Original) The apparatus of claim 21, wherein the alarm generation

2   mechanism is configured to communicate the alarm to a system administrator so

3   that the system administrator can take remedial action.

1   23. (Original) The apparatus of claim 22, wherein the alarm generation

2   mechanism is configured to communicate information specifying the nature of the

3   thermal anomaly to the system administrator.

1   24. (Original) The apparatus of claim 21, wherein the comparison

2   mechanism is configured to use sequential detection methods to detect changes in

3   the relationship between the actual signal and the estimated signal.

1   25. (Original) The apparatus of claim 24, wherein the sequential detection

2   methods include the Sequential Probability Ratio Test (SPRT).

1   26 (Canceled).

1   27. (Currently amended) The apparatus of ~~claim 26~~claim 21, wherein the

2   correlation determination mechanism is configured to use a non-linear, non-

3   parametric regression technique to determine the correlations.

1   28. (Original) The apparatus of claim 27, wherein the non-linear, non-

2   parametric regression technique can include a multivariate state estimation

3   technique.

1   29. (Original) The apparatus of claim 21, wherein the instrumentation

2   signals can include:

3   signals associated with internal performance parameters maintained by

4   software within the computer system;

5   signals associated with physical performance parameters measured

6   through sensors within the computer system; and

7   signals associated with canary performance parameters for synthetic user

8   transactions, which are periodically generated for the purpose of measuring

9   quality of service from and end user's perspective.

1   30. (Original) The apparatus of claim 21,

2   wherein the estimation mechanism is configured to derive estimated

3   signals for multiple thermal sensors in the computer system; and

4   wherein the comparison mechanism is configured to compare multiple

5   actual signals with the multiple estimated signals to determine whether a thermal

6   anomaly exists in the computer system.